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(72) Inventors:
• Wehr, Mary Ann
Hamilton, Ohio 45013 (US)
• Stillwagon, Thomas J.
Englewood Ohio 45322 (US)

(30) Priority: 28.10.1999 US 429158

(74) Representative:
Williamson, Brian et al
International IP Department,
NCR Limited,
206 Marylebone Road
London NW1 6LY (GB)

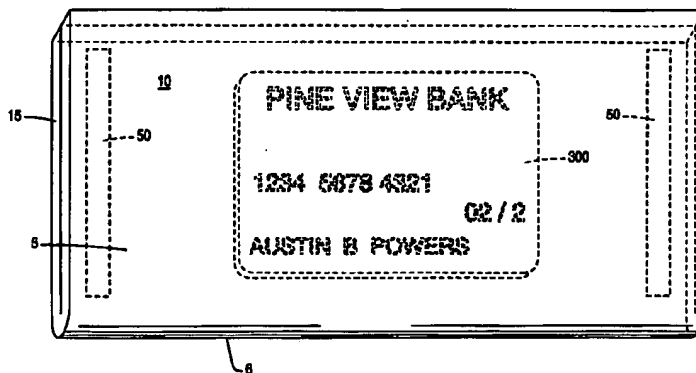
(71) Applicant:
NCR INTERNATIONAL INC.
Dayton, Ohio 45479 (US)

(54) **Envelope for use in automated teller machine**

(57) An envelope for a transaction card such as a credit card or phone card which enables the card to be withdrawn from a cash canister of an automated teller machine having a vacuum pick-up assembly and dispensed to a customer. Combinations of a card and

envelope permit positioning of the card in the envelope and combinations which include automated teller machines provide for positioning of the envelope in a cash canister of the ATM.

FIG. 4



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Description

[0001] With the increase in demand for self-service transactions, it is desirable to expand the function of automated teller machines to dispense items other than currency such as transaction cards (debit cards, credit cards, phone cards, mass transit cards, etc.). Stand alone vending machines and modules which dispense transaction cards are well known. Representative disclosures include U.S. Patent Nos. 4,285,443; 4,884,212; 5,301,834 and 5,550,533. Automated teller machines (ATM) with special equipment to dispense articles other than currency have also been disclosed in U.S. Patent Nos. 4,540,106; 5,238,143 and 5,590,609. Typically, the dispensed articles are empty envelopes or bags for use by the consumer to make deposits in connection with banking transactions.

[0002] It is impractical and often impossible to incorporate a card dispensing module in an existing automated teller machine. Automated teller machines which have equipment for dispensing articles other than currency can be modified to dispense transaction cards but will typically result in the loss of other features of the automated teller machine. In addition, the article dispensing equipment may not be reliable in that the articles intended to be dispensed by the equipment disclosed in U.S. Patent Nos. 4,540,106; 5,238,143 and 5,590,609 typically have little or no monetary value and the equipment may not have any control measures to monitor mis-feeds.

[0003] Most ATM machines have four cash canisters or cassettes from which to draw currency for dispensing. Two of these are typically reserve canisters. To avoid changing hardware, it is preferable to dispense coupons and transactions cards from these reserve cash canisters. In order for an article to be dispensed from these reserve cash canisters, it must be accessed and transported by the existing currency handling equipment within the automated teller machine. Currency is typically drawn and fed to transport equipment within an ATM by either friction rollers or a vacuum pick-up assembly as described in U.S. Patent Nos. 3,598,397, 4,513,957, 5,366,214 and 5,799,104. Once the transaction cards and coupons are accessed from the cash canisters, they are tested by "discriminators" within the currency handling equipment of an automated teller machine. These "discriminators" determine if actual currency in the proper amount is withdrawn from the canister for dispensing. Discriminators which detect mis-feeds are well known in the art and include thickness sensors, optical sensors and magnetic sensors as described in U.S. Patent No. 4,696,426, pneumatic detectors as described in U.S. Patent No. 5,725,720 and olfactory sensors as described U.S. Patent No. 5,799,102.

[0004] Papers have been found which can be dispensed from the reserve cash canisters of ATM's using a vacuum pick-up assembly. These papers also pass

the tests by "discriminators" within the automated teller machine by conforming to the properties of the currency dispensed by the ATM. Transaction cards cannot be withdrawn from the reserve cash canisters by most vacuum pick-up assemblies due to their size and density. Even if the equipment could be adjusted to withdraw the transaction cards from the reserve cash canisters, it is unlikely that the transaction cards would pass the tests by "discriminators" within the ATM or transport easily within the currency handling equipment of the ATM.

[0005] It is desirable to provide a means by which transaction cards can be dispensed from the reserve cash canisters of automated teller machines which employ a vacuum pick-up assembly.

[0006] It is an object of this invention to provide a means by which transaction cards can be dispensed through the currency handling apparatus of an ATM machine which employs a vacuum pick-up assembly.

[0007] There is provided by this invention an envelope which serves as a carrier for transaction cards and enables these transaction cards to be 1) withdrawn from a reserve cash canister of an automated teller machine by a vacuum pick-up assembly, 2) transported within the currency handling equipment of an ATM and 3) dispensed to a consumer. There is also provided by this invention a combination of an envelope and transaction card which can be withdrawn from the reserve cash canisters of an automated teller machine and dispensed to a consumer. Combinations which include an ATM are also provided.

[0008] The envelopes of this invention must be able to be withdrawn from a cash canister of an ATM machine by a vacuum pick-up assembly one-at-a-time when a transaction card is disposed therein and they must also be able to pass the discrimination tests of an ATM machine when a transaction card is disposed therein. For proper operation within a vacuum pick-up assembly, various properties, such as weight, stiffness, smoothness and porosity are a consideration in attempting to achieve the withdrawal of envelopes one-at-a-time. To pass the discrimination tests within an ATM machine, thickness is a consideration since optical density and an "output voltage" (See U.S. Patent No. 5,853,089) have been used to detect mis-feeds and double-feeds. Surprisingly, the envelope carries the transaction card through the ATM machine although the weight, stiffness, porosity and thickness of the transaction cards alone are far removed from that of the currency dispensed by the ATM. The envelope serves to provide a distribution of weight, thickness, and porosity which enable the combination of the transaction card and envelope to be withdrawn from a cash canister of an ATM and dispensed to a customer. Unlike the envelopes described in U.S. Patent 4,886,205, the envelope of this invention is adapted to be fed through document handling equipment with an article contained therein.

[0009] According to a first aspect of the present invention there is provided an envelope for a transaction

card which enables the transaction card to be withdrawn from a cash canister of an automated teller machine by a vacuum pick-up assembly and dispensed to a customer, said envelope comprising:

a. a back comprised of a paper or plastic sheet having: a height in the range of 2.5 inches to 3.75 inches and a width of about 4.75 inches to about 6.75 inches, a thickness which is 25-150% of the thickness of the currency dispensed by the automated teller machine, and a weight which is 25-150% of the weight of the currency dispensed by the automated teller machine;

b. a front comprised of a paper or plastic sheet having: a height equal to the height of said back, a width having a value within the range of at least four inches up to the width of said back, a thickness which is 25-150% of the thickness of the currency dispensed by the automated teller machine, and a weight which is 25-150% of the weight of the currency dispensed by the automated teller machine; and

c. an adhesive or heat seal positioned between portions of the front and back; wherein said front is superimposed on said back so that: the edges of the back that are perpendicular to the direction of travel in the automated teller machine are aligned with the edges of the front sheet; the opposing edges of the front, which are generally parallel to the direction of travel in the automated teller machine, are adhered to the back with an adhesive or heat seal; wherein the total thickness of said envelope is less than 10 mils

[0010] According to a second aspect of the present invention there is provided a combination of a transaction card and an envelope as in claim 1 wherein a transaction card is secured within said envelope in a position such that said transaction card will pass through zones scanned by a discrimination test within an ATM machine, when said envelope is dispensed by said ATM machine.

[0011] According to a third aspect of the present invention there is provided an envelope for a transaction card having a height of about 2 inches and a width of about 3 inches and a thickness less than 10 mils (.01 inches), wherein said envelope enables the transaction card to be withdrawn from a cash canister of an automated teller machine by a vacuum pick-up assembly and dispensed to a customer,

said envelope comprising a back, a front and an adhesive or heat seals which bind said back and front together, wherein the back and front each comprise a paper or plastic sheet having a height and width which are equal to the height and width of a United States twenty dollar bill, and wherein said back and front are joined along three edges with at least two edges being joined by said adhesive or heat seal, wherein the paper

or plastic sheet has a thickness, porosity and weight such that the envelope, when empty, can be withdrawn from a cash canister of an automated teller machine having a vacuum pick-up assembly and pass a discrimination test within an automated teller machine which determines the average thickness of the dispensed item.

[0012] An embodiment of the present invention will now be described, by way of example, with reference to the accompanying drawings, in which:

Figure 1 shows the unassembled components of an envelope of the present invention.

Figure 2 shows an envelope of the present invention.

Figure 3 shows an alternative embodiment of an envelope of the present invention; and

Figure 4 shows a combination provided by the present invention of an envelope with a transaction card disposed therein.

[0013] Envelope 10 of this invention, shown unassembled in Figure 1 and assembled in Figures 2-4, comprises front 5 and a back 15, which preferably comprise a paper or plastic sheet. These sheets may have print thereon if desired. For the embodiments shown in Figures 1, 2 and 4, a single paper or plastic sheet forms front 5 and back 15. Fold 6 defines the aligned edges of front 5 and back 15. Front 5 and back 15 can comprise separate paper or plastic sheets of different sizes as shown in Figure 3. The cash cassettes of conventional ATM machines typically can accept items of a size ranging from about 2.5 inches to 3.75 inches (65-95 mm) in the short dimension and about 4.75 inches to about 6.75 inches (120-170 mm) in the long dimension. Therefore, back 15 has a height and width within these ranges. Most preferably, back 15 has a height and width which equal the height and width of the currency dispensed by the automated teller machine. Where the envelope has dimensions equal to the currency dispensed by the automated teller machine, it can be withdrawn and transported in the ATM machine without adjusting the cash cassette components.

[0014] Front 5 has a height equal to the height of back 15 and a width greater than four inches, up to the width of back 15. Front 5 must be sufficiently wide to be engaged by the pick-up arms of the automated teller machine. The pick-up arms are typically spaced about 4 inches apart in most conventional ATM machines. Therefore, a width in the range of at least 4 inches, up to the width of back 15, is suitable. As with back 15, the height and width of front 5 preferably is the same height and width of the currency to be dispensed by the automated teller machine, as shown in Figures 1 and 2. Figure 3 shows an envelope 10 wherein front 5 is of a width less than the currency dispensed by the automated teller machine.

[0015] To ensure the thickness and weight of the

envelope does not approach levels which will result in failure of the discrimination tests within an ATM, the thickness and weight of front 5 and back 15 fall within prescribed ranges. The thickness values of back 15 and front 5, each independently fall within the range 25% to 150% of the thickness of the currency dispensed by the automated teller machine. Preferably, the thickness of back 15 and front 5, individually, fall within the range of 50 to 110% of the thickness of the currency dispensed by the automated teller machine. Similarly, the weight values of front 5 and back 15, individually, fall within the range of 25% to 150% of the weight of the currency dispensed by the automated teller machine, with preferred values falling in the range of 50 to 110% of the weight of the currency dispensed. The selection of values within these ranges is preferably restricted so that the total thickness of the envelope, including front 5 and back 15 and excluding the transaction card, is less than 10 mils (0.01 inches). This limitation on thickness helps ensure that the assembled envelope, which contains the transaction card, will transport through the automated teller machine.

[0016] The assembled envelope must also have a porosity which will permit the assembled envelope to be withdrawn from the cash canister via a vacuum pick-up assembly. This can easily be determined by first testing whether the individual sheets used to form the envelope will be withdrawn from the cash canister via a vacuum pick-up assembly. If necessary, an empty envelope can be tested.

[0017] Envelopes 10 of this invention may also comprise adhesive 50 positioned between front 5 and back 15. Where front 5 and/or back 15 comprise a thermoplastic material, they alternatively can be heat sealed together where adhesive 50 is shown. The adhesive or heat seal must provide sufficient strength to affix front 5 to back 15 and preferably do not significantly add to the thickness and weight of envelope 10. When used, the adhesives are preferably applied as a strip less than 1/3 inches in width to minimize the surface area thickened by the adhesive. The transaction card is preferably secured between front 5 and back 15 so as not to move within the envelope without applying adhesive to the transaction card itself.

[0018] Front 5 is superimposed on back 15 so that at least one edge of back 15, which is perpendicular to the direction of travel in the automated teller machine, is aligned and joined with an edge of front 5. In the embodiments shown in Figures 1, 2 and 4, this alignment and junction are achieved through fold 6. In Figure 3, edge 20 of back 15 is aligned with edge 25 of front 5 and they are bound together by adhesive 50 or they are heat sealed.

[0019] Opposing edges 60 and 70 of front 5, which are generally parallel to the direction of travel of the envelope in the automated teller machine, are adhered to back 15 with adhesive 50. In envelope 10 of Figure 2, opposing edges 60 and 70 of front 5 are aligned with

edges 100 and 110 of back 15, respectively. In Figure 3, edges 60 and 70 of front 5 are not aligned with edges 110 and 100 but are centrally positioned on back 15 and adhered thereto.

[0020] Top edge 80 of front 5 is preferably aligned with edge 81 of back 15 and need not be adhered or heat sealed to back 15 to secure the transaction card. The envelopes 10 shown in Figures 1-4 do not have top edge 80 adhered to back 15; however, top edge 80 may be adhered to the back sheet 15 if desired so as to further secure the transaction card, preferably at points away from the middle of the envelope.

[0021] As discussed above, the porosity of the envelope must be sufficient to permit the envelope to be withdrawn from the cash canister via a vacuum pick-up assembly. Preferably, the envelope will dispense from an ATM having a vacuum pick-up assembly when empty and most preferably, the individual sheets forming the back 15 and front 5 will dispense from such an ATM.

[0022] Combinations of a transaction card 300 and an envelope 10, as described above, are also provided by this invention and an embodiment thereof is shown in Figure 4. The transaction card 300 can be any conventional credit card, phone card, debit card, mass transit card, etc. and typically has a height of about 2 inches and a width of about 3 inches. The transaction card should be thin and flexible enough so that it can be fed without breaking. For conventional plastic materials, this means a thickness of less than 10 mils preferably 7 mils or less. In preferred embodiments, the combination of transaction card 300 and envelope 10 provides for positioning of the card in the envelope, preferably in the center of the envelope, and provides for a total thickness of less than 20 mils. An adhesive or heat seal may be used to secure the card away from edges where desired by adhering front 5 to back 15 or by adhering transaction card 300 directly to envelope 10. When an adhesive is used to bond the transaction card to the envelope, the adhesive should be kept away from the middle of the envelope where most thickness discriminators scan the dispensed article. Combinations of this invention may also include an ATM machine having a vacuum pick-up apparatus and an envelope positioned in the cash canister having a transaction card disposed therein.

[0023] Without further elaboration, it is believed that one skilled in the art can, using the preceding description, utilize the present invention to its fullest extent. All publications and patents referred to above are hereby incorporated by reference.

[0024] While the invention has been particularly shown and described with reference to particular embodiments thereof, it will be understood by those skilled in the art that various changes in form and details may be made therein without departing from the scope of the invention.

Claims

1. An envelope for a transaction card which enables the transaction card to be withdrawn from a cash canister of an automated teller machine by a vacuum pick-up assembly and dispensed to a customer, said envelope comprising:
 - a. a back comprised of a paper or plastic sheet having: a height in the range of 2.5 inches to 3.75 inches and a width of about 4.75 inches to about 6.75 inches, a thickness which is 25-150% of the thickness of the currency dispensed by the automated teller machine, and a weight which is 25-150% of the weight of the currency dispensed by the automated teller machine;
 - b. a front comprised of a paper or plastic sheet having: a height equal to the height of said back, a width having a value within the range of at least four inches up to the width of said back, a thickness which is 25-150% of the thickness of the currency dispensed by the automated teller machine, and a weight which is 25-150% of the weight of the currency dispensed by the automated teller machine; and
 - c. an adhesive or heat seal positioned between portions of the front and back; wherein said front is superimposed on said back so that: the edges of the back that are perpendicular to the direction of travel in the automated teller machine are aligned with the edges of the front sheet; the opposing edges of the front, which are generally parallel to the direction of travel in the automated teller machine, are adhered to the back with an adhesive or heat seal; wherein the total thickness of said envelope is less than 10 mils.
2. An envelope for a transaction card as claimed in claim 1, wherein the height and width of the front and back are equal to the height and width of the currency dispensed by an automated teller machine (ATM).
3. An envelope for a transaction card as claimed in claim 2, wherein the front and back are of equal weight, thickness and porosity.
4. An envelope for a transaction card as claimed in claim 1, wherein the front and back are derived from a single sheet paper or plastic and one pair of the aligned edges of the front and back, which are generally perpendicular to the direction of the travel within an ATM machine, is a fold in said single sheet of paper or plastic.
5. An envelope for a transaction card as claimed in claim 1, wherein the front and back are separate sheets of paper or plastic and one pair of the aligned edges of the front and back, which are generally perpendicular to the direction of the travel within the ATM machine, is formed by joining the separate sheet of the front to the separate sheet of the back sheet with an adhesive or heat seal.
6. An envelope for a transaction card as claimed in claim 5, wherein both pairs of aligned edges of the front and back, which are generally perpendicular to the direction of travel within the ATM machine, are bound together by an adhesive or heat seal.
7. An envelope for a transaction card as claimed in claim 3, wherein the thickness values for said front and back are from 50-110% of the thickness of the currency dispensed by said automated teller machine.
8. An envelope for a transaction card as claimed in claim 7, wherein the values for the weight of said front and back are from 50-110% of the weight of the currency dispensed by said automated teller machine.
9. An envelope for a transaction card as claimed in claim 5, wherein the front and back are bound together so as to position the transaction card in the middle of said envelope and away from all edges of said envelope.
10. A combination of a transaction card and an envelope as claimed in any of claims 1 to 9 wherein a transaction card is secured within said envelope in a position such that said transaction card will pass through zones scanned by a discrimination test within an ATM machine, when said envelope is dispensed by said ATM machine.
11. A combination as claimed in claim 10 wherein a transaction card is secured within said envelope in a position such that said transaction card does not pass through zones scanned by a discrimination test within an ATM machine, when said envelope is dispensed by said ATM machine.
12. A combination as claimed in claim 1, wherein the transaction card is secured in the center of said envelope away from all edges of said envelope.
13. A combination as in claim 12 wherein the transaction card has a thickness of less than 10 mils (0.01 inches) and said combination has a thickness of less than 20 mils (0.02 inches).
14. A combination as claimed in claim 12 wherein said front and back of said envelope have the dimensions

sions of a United States twenty dollar bill and the transaction card has a height of about 2 inches and a width of about 3 inches.

15. An envelope for a transaction card having a height 5
of about 2 inches and a width of about 3 inches and
a thickness less than 10 mils (.01 inches), wherein
said envelope enables the transaction card to be
withdrawn from a cash canister of an automated
teller machine by a vacuum pick-up assembly and 10
dispensed to a customer,
said envelope comprising a back, a front and an
adhesive or heat seals which bind said back and
front together, wherein the back and front each 15
comprise a paper or plastic sheet having a height
and width which are equal to the height and width of
a United States twenty dollar bill, and wherein said
back and front are joined along three edges with at
least two edges being joined by said adhesive or 20
heat seal, wherein the paper or plastic sheet has a
thickness, porosity and weight such that the enve-
lope, when empty, can be withdrawn from a cash
canister of an automated teller machine having a
vacuum pick-up assembly and pass a discrimina- 25
tion test within an automated teller machine which
determines the average thickness of the dispensed
item.

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FIG. 1

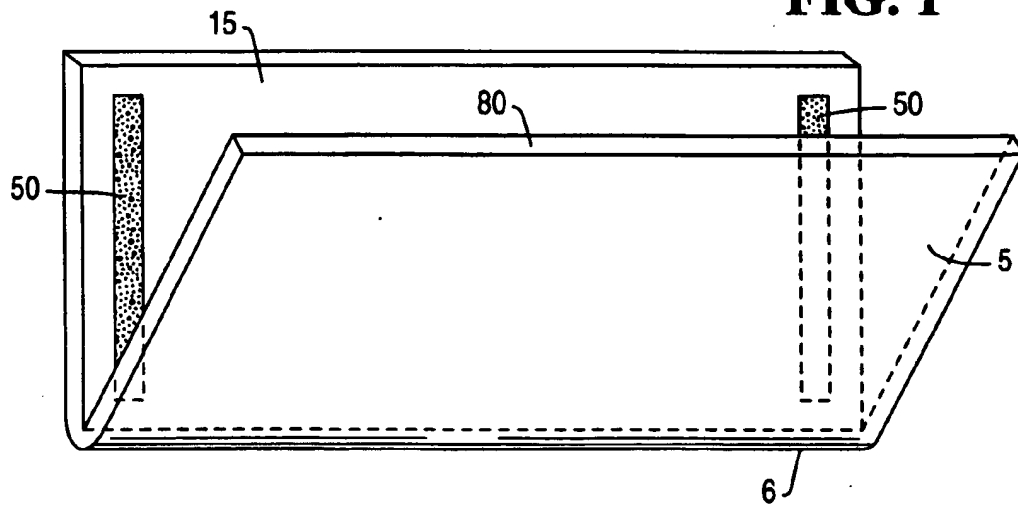


FIG. 2

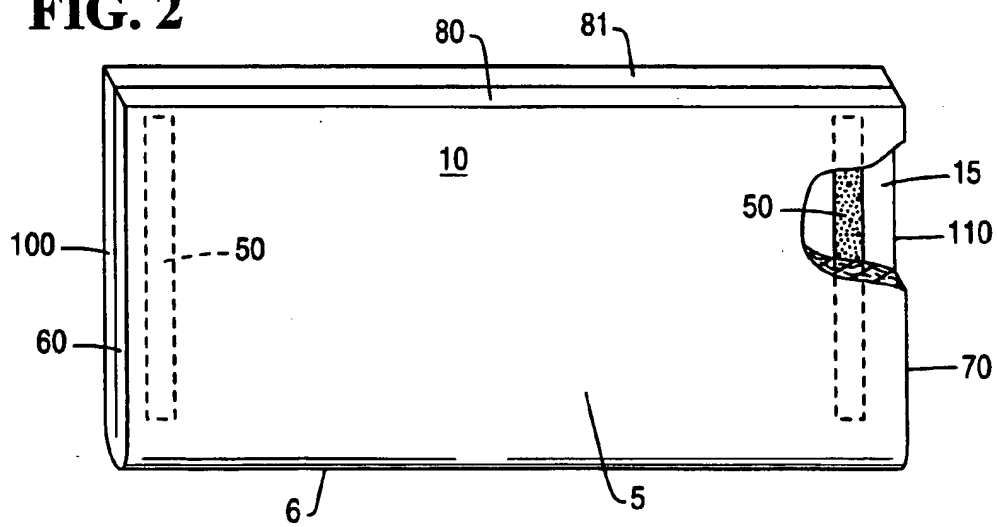


FIG. 3

